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EDUCATION, SCIENCE, TRANSFER OF ENVIRONMENTALLY SOUND TECHNOLOGIES, COOPERATION AND CAPACITY-BUILDING

Letter dated 22 February 1995 from the Chargé d'affaires of the Permanent Mission of the Republic of Korea to the United Nations addressed to the Secretary-General

It gives me great pleasure to transmit herewith to you a copy of the report on the Workshop on the Promotion of Access to and Dissemination of Information on Environmentally Sound Technologies (ESTs). Hosted by the Government of the Republic of Korea, this workshop was held in Seoul from 30 November to 2 December 1994.

The workshop constituted one of the Republic of Korea's contributions to the preparatory process for the third session of the Commission on Sustainable Development and its conclusions and the formulated plan of action concerning information exchange about ESTs would provide a valuable input to the ongoing works of the Commission on Sustainable Development.

I would highly appreciate it if you would arrange for the report to be circulated as an official document of the Commission on Sustainable Development under item 5 of the provisional agenda.

(Signed) Wonil CHO
Chargé d'affaires

* E/CN.17/1995/1.

Annex

REPORT OF THE WORKSHOP ON THE PROMOTION OF ACCESS TO AND DISSEMINATION OF INFORMATION ON ENVIRONMENTALLY SOUND TECHNOLOGIES, HELD AT SEOUL FROM 30 NOVEMBER TO 2 DECEMBER 1994*

* Circulated in the language of submission only.

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Introduction

1. With the concept of sustainable development setting the stage for UNCED in Rio, Agenda 21, the guideline for development towards the 21st century, was adopted by 178 nations from all corners of the world. As stipulated in Chapter 34 of Agenda 21, the utilization of environmentally sound technologies (ESTs) is a critical component of sustainable development.

2. It is acknowledged that there is already a great deal of information on ESTs available, but the sources of this information have not been easily accessible. In this setting, many efforts have been put forth to support and promote the transfer of ESTs. There have been workshops and meetings to address the issues of technology transfer, held in Oslo, Cartagena and New York, in October 1993, November 1993 and February 1994, respectively.

3. These meetings have contributed to laying the foundation for the Seoul Workshop, where it was hoped that a concrete and pragmatic plan of action that would yield timely results could be formulated.

4. The objectives of this Workshop were to:

- review the latest information systems for ESTs, including inventory, database and networking experiences;

- identify the obstacles and opportunities involved in accessing and disseminating information, and seek innovative approaches to transfer, through the experiences of users and suppliers;

- formulate a general strategy, from the perspectives of both users and suppliers, for promoting access to ESTs and ensuring their timely dissemination, while taking into account on-going multilateral negotiations and the need for improving information exchange conditions, including concessional and preferential terms for developing countries; and

- design a pragmatic plan of action to expedite the free flow of ESTs, to be submitted to the 3rd session of the CSD in April 1995.

5. 40 representatives from 19 developing and developed countries, international organizations including UN agencies and OECD, and the private sector, participated in the Workshop, which focused around the following themes:

- the usefulness of EST information networks, and evaluation of current networks in operation;

- developing and developed countries' views on constraints of information access and dissemination; and

- enhancing transfer of new and available information on ESTs.

6. The proceedings of the workshop were enhanced by expert presentations and open discussions on the issues. This report has been prepared by the Ministry of Environment of the Republic of Korea based on the work submitted by the official rapporteurs of the Workshop. The views expressed in the report do not necessarily represent a comprehensive account of the views expressed by all participants, nor do they necessarily reflect the views of the government of the Republic of Korea.

Session I: Usefulness of EST Information Networks

> "The speed and effectiveness with which an EST is adopted is dependent upon the ability of the recipient to know why that technology is needed, to understand the technical options available, and to select, assess and implement an appropriate technology."

7. The importance of promoting more awareness about the need for ESTs was addressed. More efforts should be made to catalyze awareness through international, corporate, educational and media efforts.

8. The development of information about ESTs should be demand-driven, not supply-driven. Information is of little use if it does not identify a real needs and capabilities of a prospective technology user, for ESTs must be "tailor made." In this regard, the demand for ESTs must first be established through heightened awareness of benefits associated with implementing ESTs. This being the case, feedback and delivery mechanisms should be established or enhanced to continually assess the types of information needed and the suitable formats for information, through electronic systems, case studies, literature abstracts, bulletins, publications, query response systems, questionnaires, workshops and other forms of networking.

9. Capacity building for assessing environmental conditions must be promoted to ensure key actors will make informed, appropriate decisions when assessing and using ESTs, as information alone will not provide knowledge or skills. Successful performance of a technology depends not only on the hardware itself, but on the management systems, human resources systems, and infrastructures to transfer and manage technology as well.

10. Multiplicity of information access points is needed, rather than "one stop shops" for technology information. Existing information access points should be strengthened to

better serve their target groups, including Chambers of Commerce, trade and industry associations, academic centers, and regional centers of expertise. Networks between related information access points should be created.

11. EST information systems, once developed, must be continuously updated as technologies change, as well as the need for new technologies as regulations and economic priorities change. These activities will necessarily imply recurring costs for maintaining EST information systems.

12. Learning from the successes and failures of others is crucial for selecting an appropriate and effective EST. Experience sharing, through case studies, workshops and networking should be promoted, as they can be quite beneficial for developing countries. More attention should be given to collecting and disseminating these experiences.

13. Since Small and Medium-Sized Industries (SMEs) comprise significant portions of national economies in many developing countries, more efforts are required to provide assistance in understanding, selecting and implementing ESTs in SMEs, from both public and private sectors.

14. Joint technology development based on North-South partnerships should receive more emphasis in the future. In this regard, EST suppliers should be encouraged to take into account the local needs and conditions in developing countries and actively seek partners for joint ventures, licenses, subsidiaries, etc.

15. The UNEP Industry and Environment experience with the transfer of ESTs supports the importance of viewing technology transfer as a three phase process: the awareness creation phase, information assessment phase and implementation phase. Heightened awareness of the socio-economic benefits and needs of ESTs must be more widely understood in order to create a demand for them. Transfer of ESTs requires the ability to obtain and assess information on ESTs, through a wide range of mechanisms. Both the information content and the information

delivery mechanisms must be based on user needs and capabilities. The final phase, technology implementation, involves selecting the technology and putting in place the infrastructure to transfer and manage it. Funding is necessary to support all three phases, and efforts should be made to secure funding from existing sources, including governments, businesses, the UN system, NGOs, etc.

Session II: Development and Transfer of ESTs and Major Constraints on EST Information Flow

> "The increasing awareness of the important role that the transfer of ESTs plays in economic growth and international competitiveness has been accompanied by an increased understanding of the complexity of the transfer process. Constraints in technology transfer emerge at all stages of the transfer process and they concern both information and knowledge about technologies, as well as the technologies themselves."

17. ESTs, as defined in Agenda 21, consist of the hardware as well as the capacity and knowledge to effectively and efficiently utilize the hardware. Discussions were directed more towards cleaner technologies to prevent pollution, rather than end-of-pipe devices for treatment, which usually add to production costs without adding to productivity.

18. Constraints to accessing information on ESTs and the ESTs themselves that were addressed during discussions included: high direct costs in combination with lack of resources, capital and financing; barriers related to the proprietary nature of information or technologies; lack of technical and managerial capacities; inability to access appropriate information on ESTs, and; lack of knowledge on the potential contributions of ESTs to development objectives (translating to no demand).

19. While the private sector is the primary developer and user of ESTs, governments must assume a leadership role in creating a demand for ESTs. Full engagement of the private sector, including trade associations, institutes, NGOs, consulting firms, etc., by governments is a prerequisite for effective transfer of information on ESTs and the technologies themselves. Governments should focus more activities on improving information flows in the private sector, especially to SMEs in lesser developed countries which tend to be lacking in basic infrastructures and capabilities, and demonstrate the

environmental benefits as well as cost benefits of utilizing ESTs, in particular clean technologies. Direct interactions between the key agents of transfer in public and private sectors is crucial for effective information and technology transfer.

20. ESTs, especially clean technologies, should be made more financially attractive to developing countries, with an emphasis on SMEs, by enhancing access to capital and external financing for both small and large scale projects, and by facilitating joint venture schemes. Developing countries should also be provided the appropriate information (through information centers, training, demonstrations, etc.) that will clearly illustrate the increased returns on investments, potential cost reductions, and real environmental benefits from employing clean technologies. In addition to financial incentives, the importance of a strong regulatory framework as essential component of creating a demand for clean technologies was emphasized.

21. One of the possible means recommended to address the information needs of developing countries involved the secondment of EST expert teams to work on EST projects by providing the information, capacity building and training, and know-how required for operating, maintaining and servicing ESTs.

22. The process of transfer is not an instant process, as was empnasized in the course of discussions. The appropriate balance of regulation and enforcement, economic incentives, interest in social issues, societal attitude, and community pressure must be achieved. To this end, partnerships and cooperation are indispensable in the transfer process.

23. The important role of technology centers, and need to establish basic criteria for them, were heavily emphasized. Individual countries should be responsible for maintaining national centers that are capable of processing information that will enable them to host and evaluate technologies. In setting the criteria for these centers, the importance of

joint, interlinked efforts was noted to maintain and effectively operate them, since new initiatives for fostering ESTs are constantly emerging.

Session III: Enhancing Access to and Dissemination of New and Available Information on ESTs.

> "In developing or improving mechanisms for the transfer of ESTs, technology transfer should be seen as a flexible and adaptable concept that embraces the whole process of accessing, transferring and diffusing technology, and building technological capacity."

24. A strong regulatory framework and enforcement system provide an incentive to acquire ESTs. However, it is important to take into account the high compliance costs that industries in developing countries may have to face. In this regard, technical assistance arrangements and special funds should be given consideration.

25. The concept of environmentally sound technologies rights banks (ESTRBs) was brought up during discussions. The function of an ESTRB is to serve as an intermediary party that would procure proprietary rights to ESTs from industries in developed countries and make them available to industries in developing countries under concessionary terms. This type of transfer mechanism could be particularly useful in developing countries where market-based incentives are insufficient to induce commercial transactions.

26. The nature of Intellectual Property Rights (IPRs) was also identified as an obstacle for accessing proprietary ESTs, and the need to formulate cooperative schemes among countries to enhance access was emphasized, including informal, collaborative arrangements on a bilateral level. An initial point for addressing IPRs could be to focus on information about patents which could facilitate the determination of the status of required technologies and their procurement.

27. The concept and potential role of a "Global Information Infrastructure (GII)" within the context of ESTs was also presented. The proposed GII would integrate regional and national information networks of international organizations,

governments, and the private sector, as well as sector-specific databases. It is important that even the least developed countries are easily able to access the network, through special provisions such as lower fees, loans, etc.

28. Empirical evidence has shown that lack of appropriate finances is the primary obstacle to accessing ESTs. In this regard, the development and application of innovative financial support mechanisms are therefore indispensable. Some of the measures that were presented included: tradeable pollution permits, international emission taxes, Build-operate-transfer (BOT) mechanisms, and venture capital funding.

29. The important role of SMEs in the transfer of ESTs, especially in developing countries, was continuously emphasized throughout the course of discussions. Results from studies aimed at SMEs indicated that information needs for SMEs were not limited to technologies but included information on related aspects such as legislation, standards, financing markets, etc. When setting up information systems, it was noted that existing national infrastructures must be utilized, as far as feasible, to ensure cost effectiveness and optimal reach.

Session IV: Adoption of the Chairman's Summary and the Seoul Plan of Action.

30. Based on the presentations and discussions of Sessions I, II and III, the participants gathered for the final session to finalize and adopt the Chairman's Summary and the Seoul Plan of Action, which will be submitted to the 3rd session of the CSD in May 1995. The documents are presented as follows.

Chairman's Summary

1. Presentations and discussions of the Workshop confirmed the increasing importance of information exchange on environmentally sound technologies (ESTs) in the context of improved technology transfer, adoption and policy decision-making. Access to reliable, accurate and updated information on EST alternatives and the dissemination of such information to the users, in particular to users in developing countries, is essential for promoting the use of ESTs and therefore shifting to more resource-efficient, energy-saving and cleaner systems of production.

2. It was generally agreed that the adoption of a regulatory framework was an important precondition for the development and use of ESTs. It was also recognized that the adoption of environmental regulations or standards ought to be accompanied by the provision of economic incentives and institutional capacity building. It was also recognized that regulatory frameworks should take into account local environmental problems and conditions.

3. It was recognized that costs of ESTs and lack of financing are constraints to the transfer and adoption of ESTs, in particular for SMEs. Participants highlighted the importance of applying a mix of financial instruments and mechanisms. In this context it was mentioned that a number of innovative mechanisms have been proposed, such as "build-operate-transfer" (BOT) schemes, venture capital funds, international emissions taxes, tradeable permits and offset arrangements.

4. It was also stressed that better use should be made of existing technology transfer mechanisms and that new approaches be based on cooperation and pragmatism, better mixing of options, and should respond to actual needs and requirements of end-users.

5. The meeting felt that there is a need for promoting environmentally sound technology centers (ESTCs) as an important part of the institution-building process. This promotion should primarily build upon existing national institutions, including research centers. Private sector institutions/centers must be directly involved with, or connected with, these centers. The ESTCs could perform the following functions: awareness building about the need for ESTs; training activities; initiating demonstration projects; providing access to information from various sources; providing regular assessments of user needs; and helping in identification of possibilities for obtaining financial means. Links should also be established between the ESTCs.

6. A number of participants noted that the information being provided about ESTs must accurately reflect the real needs of the target users, i.e. that the information is demand-driven, not supply-driven. Changing regulatory environments, new technological developments, and shifting economic imperatives all contribute to the modification of user needs. To ensure that EST information systems sufficiently address these needs, it was suggested that regular feedback mechanisms be established by the EST information providers to gauge user requirements.

7. Many participants emphasized that a large number of technology information channels exist worldwide (e.g., Chambers of Commerce, industry associations, research centers, international bodies) and that these channels should be strengthened, rather than creating many new channels. A multiplicity of points of access to information should be promoted, provided that they are coordinated and networked sufficiently to provide for efficient approaches and cost-efficiency. Participants felt the need for a consultative mechanism dedicated to enhancing cooperation and consistency between existing and emerging systems for the exchange of EST information.

8. There is a clearly growing demand for environmental and technology information by small and medium sized enterprises in the developing countries, but a lack of real-time, on-line, current information. Therefore, the information needs of small and medium sized enterprises should receive priority attention in terms of both the contents of information and information delivery systems. Match-making services could contribute to making both suppliers and potential users aware of the existing opportunities for environmentally sound technology transfer and related information exchange.

9. The need for assessing technologies in terms of their environmental soundness was recognized. Therefore, it is essential to build the user's capability to carry out evaluations/assessments of technologies to be introduced or transferred. It was also recognized that assessments needed to be sector or project-specific. However, the development of basic criteria or general guidelines for the evaluation of environmental and safety performance could be important tools in transferring and applying ESTs.

10. Some participants felt that the extension of intellectual property rights (IPRs) protection to new areas might potentially raise problems for the transfer of ESTs, particularly to the more advanced developing countries. In this connection, the need for a better understanding of the implications of the recent developments regarding IPRs was highlighted.

11. Cases presented demonstrated that existing financing institutions sometimes favor large scale investments while ESTs often require tailor-made, small-scale solutions, and pre-feasibility studies, such as energy efficiency studies and environmental audits. In this regard, sector specific technology intermediaries could be a support in providing necessary investments.

12. A number of presentations provided examples of successful "teaming" or partnership arrangements between companies initiated with the support of governments. Participants felt that lessons should be learned from those experiences.

"SEOUL PLAN OF ACTION CONCERNING INFORMATION EXCHANGE ABOUT ENVIRONMENTALLY SOUND TECHNOLOGIES"

Introduction

Pursuant to Decision E/CN 17/1994/L.10 "Transfer of environmentally sound technologies, cooperation and capacity-building" adopted by the Commission on Sustainable Development (CSD) at its second session in 1994, the Government of the Republic of Korea hosted a Workshop on "The Promotion of Access to and Dissemination of Information on Environmentally Sound Technologies" held in Seoul from 30 November to 2 December 1994. The workshop emphasized cleaner technologies in its deliberations. The primary objective of the Workshop was to formulate a plan of action to be submitted to the CSD at its third session in April 1995 for further consideration. Participants of 19 countries and 13 international organizations and institutions attended. By organizing this workshop, the Republic of Korea showed its leadership in promoting EST transfer.

Based on background documentation prepared for the Workshop, the presentations and extensive discussion at the meeting, the Chairman, Assistant Minister Cho of the Republic of Korea, Ministry of Environment, proposed to the workshop that the action plan deal with the following issues:

- promotion of environmentally sound technology centers;
- training and demonstration projects;
- capacity building for technology assessment;
- dissemination of success stories;
- sector specific tasks and intermediary services.

This was agreed and the workshop participants suggest that the CSD consider endorsing the following actions:

1. **Environmentally Sound Technology Centers (ESTCs) can play an important role in the promotion of environmentally sound technologies.**

Proposed action:

Promote ESTCs, or their equivalent networks, building upon existing national institutions/organizations in countries, including research centers, for example, centers established with the support of UNEP/UNIDO or of bilateral donors. The private sector must be directly involved in or connected with the ESTCs. The ESTCs should communicate with one another. ESTCs also can act as a broker to facilitate business operations.

The ESTCs should perform the following functions:

- building awareness;
- providing regular assessments of user needs;
- training;
- providing access to information from many sources;
- initiating demonstration projects;
- helping to identify financial resources; and
- helping to identify and obtain transfer of public domain ESTs.

Major actors:

All governments, in direct cooperation with the private sector, and (if appropriate) in cooperation with international organizations and financial institutions.

2.a. There is a great deal of information about ESTs available. The sources of this information may not be easily accessible or adequately described.

Proposed action:

Collect and critically describe the sources of information about ESTs, i.e., databases. The results must then be made widely available.

Major actor:

UNEP in consultation with other UN Agencies and governments

2.b. Although a multiplicity of information exchange systems is desirable, there is a risk of their uncoordinated proliferation, including those provided by (or with the support of) the UN system.

Proposed action:

Establish a "consultative mechanism" to enhance cooperation and compatibility between existing and projected systems for exchange of information on ESTs, for example, those operated by - or with the support of - the UN system and under international conventions.

Major actors:

In a first phase - UN agencies, secretariats of conventions, relevant international organizations.

In a second phase - other managers of information exchange systems.

3.a. Developing countries and countries in transition must be assisted in their efforts to assess the technologies considered for introduction or transfer, also with a view to introducing ESTs and preventing the transfer of inappropriate technologies.

Proposed action:

Develop and agree upon basic criteria and guidelines for evaluation of environmental and safety performance building upon already existing work. These guidelines could emphasize transfer of cleaner technologies.

Major actors:

UNEP and relevant intergovernmental bodies.

Proposed action:

3.b. These guidelines, may assist the concerned parties in ensuring that the technologies are appropriate to the goals of sustainable development. The criteria and guidelines should also be used for private sector technology transfers.

Major actors:

Governments, private sector.

4. The dissemination of information about experiences, e.g. success stories and lessons learned, has proven to be beneficial for action in many environmental fields. However, successes and lessons learned are either not well-documented or the reasons for success are "forgotten" shortly after technologies have been implemented.

Proposed action:

Increase activities to collect and disseminate successful EST transfer experiences by sharing of information through, for example, case studies, workshops, and networking activities. Cases could relate to the various "stages" in improving environmental performance, e.g.,

- performing environmental audits;
- better management control of existing plants ("good housekeeping" actions);
- replacement of old equipment with the available pollution preventing technologies;
- development and introduction of new clean processes; and
- economic/financial benefits to be realized by implementation of ESTs.

Major actors:

Private businesses, local and national governments, financial institutions, and international organizations.

5. Intermediaries could identify and acquire rights to relevant ESTs, locate potential users, facilitate licensing arrangements and in conjunction with the ESTCs, or as an integral part of them, provide technical advice.

Proposed action:

In order to meet user needs, in particular those of small and medium-sized enterprises, identify sector-specific technology intermediaries, for example, consultancy firms, relevant trade associations, and/or international/regional financial institutions. In cases where several such intermediaries may be active, a regional or national "hub" could be an efficient approach.

Major actors:

Private businesses, financial institutions, ESTCs.

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